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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/788,560	01/24/97	YAMAZAKI	S 0756-1626

MM42/1014  
SIXBEY FRIEDMAN LEEDOM & FERGUSON  
2010 CORPORATE RIDGE  
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MCLEAN VA 22102

EXAMINER

NADAV, O

ART UNIT	PAPER NUMBER
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2811

*24*

DATE MAILED:

10/14/99

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.  
08/788,560

Applicant(s)  
Yamazaki et al.

Examiner  
ORI NADAV

Group Art Unit  
2811



☒ Responsive to communication(s) filed on Aug 2, 1999

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 78-157 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 78-157 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 78-103, 105-111, 113-119, 121-127 and 129-133 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson et al. (4,755,865) in view of Saito et al. (4,772,927).

Wilson et al. teaches in figure 3 substantially the entire claimed structure, including a MOS transistor comprising a semiconductor layer 42 comprising a channel region 42B in between source and drain regions 42A, a gate electrode 44 adjacent the channel region with gate insulating film 43 interposed therebetween, wherein the source and drain regions have at least one portion 42C containing one or more elements selected from a group consisting of carbon, nitrogen and oxygen at a concentration higher than  $10^{15}$  atoms per cm cube or more (column 4, lines 39-49).

Wilson et al. do not teach a MOS transistor used in a CMOS device.

Saito et al. teach a MOS transistor in figure 1e comprising a semiconductor layer comprising a channel region 7 inbetween source and drain regions 6, a gate electrode 9 adjacent the channel region with gate insulating film 5 interposed therebetween, wherein the source and drain regions

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have at least one portion containing one or more elements selected from a group consisting of carbon, nitrogen and oxygen at a concentration higher than  $10^{19}$  atoms per cm cube or more (column 3, line 49 to column 4, line 24), formed in a CMOS device (figure 2).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Wilson et al.'s transistor in a CMOS device, because it is conventional in the art to connect individual transistors in order to form a CMOS device. The combination is motivated by the teachings of Saito et al. who point out the advantages of using a TFT transistor having source and drain regions containing carbon, nitrogen or oxygen at a concentration higher than  $10^{19}$  atoms per cm cube or more in a CMOS device.

Regarding claims 102, 110, 118 and 126, Saito et al. teach a channel region having at least one portion containing one or more elements selected from a group consisting of carbon, nitrogen and oxygen at a concentration higher than  $10^{19}$  atoms per cm cube or more (column 5, lines 20-23).

3. Claims 104, 112, 120, 128 and 134-157 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson et al. and Saito et al., as applied to claims 102, 110, 118, 126 above, and further in view of Higashi et al. (4,694,317).

Wilson et al. and Saito et al. teach substantially the entire claimed structure, including a first interlayer insulating film (ILD) 10 (Saito et al.) comprising inorganic material, except a second

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ILD film comprising organic resin and a pixel electrode on the second ILD film formed in a transparent or a reflective device.

Higashi et al. teach in figure 1D a transparent or a reflective device comprising a first interlayer insulating film 5 comprising inorganic material, a second ILD film 7 comprising organic resin and a pixel electrode 11 on the second ILD film (column 3, line 64 to column 4, line 48).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a second ILD film comprising organic resin under a pixel electrode in Wilson et al.'s device, in order to provide better protection for the device. The combination is motivated by the teachings of Higashi et al. who point out the advantages of using an organic ILD film under a pixel electrode in a TFT transistor.

#### ***Response to Arguments***

4. Applicant's arguments with respect to claims 78-157 have been considered but are moot in view of the new ground(s) of rejection.

**Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the**

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**notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.**

Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to *Examiner Nadav* whose telephone number is **(703) 308-8138**. The Examiner is in the Office generally between the hours of 7 AM to 4 PM (Eastern Standard Time) Monday through Friday.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **308-0956**

Ori Nadav

October 4, 1999

STEVEN H. LOKE  
PRIMARY EXAMINER  
GROUP 2500

